

Providing Economic Incentives in Environmental Regulation

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On April 23, 1990, Richard Stewart, E. Donald Elliott, and David Hawkins spoke before the Administrative Conference of the United States on the use of economic incentives in environmental regulation. Presented during the Congressional debate over the Clean Air Act Amendments, the speeches focus on the use of emissions trading as an alternative form of pollution control.

The text of the speech has been edited.

CHAIRMAN BREGER: Let me welcome you to this Administrative Conference colloquy on providing economic incentives in environmental litigation.

As many of you know, the Administrative Conference of the United States is an independent federal agency charged with promoting reforms and improvements in administrative procedures and regulatory processes. As a part of its work, the Conference regularly holds colloquies to allow an airing of views on matters of current interest.

We meet 20 years and 1 day after Earth Day 1970. An estimated 20 million people participated in that event to raise public and Governmental consciousness about environmental problems. Concern about the environment has spread over the past 20 years to virtually all segments of society. A New York Times poll released last week reported that 84 percent of Americans believe pollution is a national problem that is getting worse, and 74 percent said that protecting the environment is so important that regulatory standards cannot be too high, regardless of their cost. Today everyone, including our legislators,

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The views expressed are those of the authors personally and not necessarily those of any organization or group with which they are affiliated.

is an environmentalist. Indeed, the extent of society's changed perception of environmental issues was literally brought home to me by my five-year old daughter. She needed an Earth Day lunch for school today, and we had to give her all sorts of things in recyclable packages and cloth napkins. She will come home tonight and tell us what she learned about the environment. Fortunately, I also will learn something about the environment today and will be able to respond.

Earth Day 1970 was followed by creation of the Environmental Protection Agency as an executive agency. In addition to creating the EPA as the central environmental regulator, Congress, in the succeeding 20 years, passed at least 20 major pieces of legislation that established or extended Federal regulation of water pollution, air pollution, noise pollution, solid waste disposal, pesticides, coastal zones, surface mining, drinking water, toxic waste—the list goes on and on.

Events such as Earth Day are important to gain attention and galvanize public support for change. But translating the concern generated by such publicity into concrete action and improvements is a much more difficult task. That is what today's colloquy is about: how best to regulate human activities so that environmental pollution is minimized or eliminated. More specifically, our panel will address the role economic incentives can play in such environmental regulation.

Twenty years ago I probably would have been ridiculed for suggesting that market concepts might be useful in combatting environmental pollution. In its heady salad days, the environmental movement evinced a deep distrust of the corporate world and the economic thinking that undergirded it. That distrust went far beyond the issue of conceptualizing pollution as an "externality," to use the economic term for the cost imposed on society by industries engaged in manufacturing. That externalities exist and need to be controlled cannot be denied. On the other hand, recent insights into the state of the Eastern European environment should disabuse anyone of the notion that our mixed market economy has been worse for the environment than other types of economies. By the late 1970s and early 1980s, Americans had a much greater understanding of the complexity of environmental problems. An oil embargo and a recession led responsible people to realize that the goal of protecting the environment could not be pursued regardless of cost. Also, technology-forcing regulation of point source emissions, while difficult, proved far easier than regulation of nonpoint sources of pollution—such as agricultural runoff—or the clean-up of toxic wastes that have accumulated over time. So more of us came to realize that the costs as well as the benefits of environmental regulation have to be analyzed, and that more creative methods of pollution control have to be developed if environmental problems are to be effectively addressed.

Economic Incentives in Environmental Regulation

Reanalysis of the experience of the last twenty years has caused a recognition, as well, of the limits of traditional command-and-control regulation. By command-and-control I mean regulation that requires specific action by a regulated entity, usually meeting stated technological standards of pollution or safety (often the best available technology). Such regulation often has a number of counter-intuitive results. As Cass Sunstein has pointed out,¹ the best available technology approach can actually inhibit technological progress by making the least polluter pay more than the most polluter. An example of this would be the EPA's program requiring the installation of antipollutant technology in new, not old, automobiles. Further, command-and-control implies a rejection of "balancing" or "cost-benefit" analysis and this can lead to a failure to regulate at all—at with toxic substance regulation by either the EPA or OSHA, because of the *in terrorem* effect or regulatory rigidity.

A series of executive orders—beginning in the Ford Administration and culminating in President Reagan's issuance of Executive Order 12291 and Executive Order 12,498²—mandated cost/benefit analysis of regulations. The institutionalization of such cost/benefit analysis in the regulatory process has increased the role of economists in governmental decision-making and fostered a burgeoning economics literature on alternatives to traditional command-and-control regulation. One of the more commonly advocated market-oriented, regulatory alternatives to command-and-control regulation is marketable rights. This approach involves government-issued permits that can be bought and sold. The underlying theory of such permits is that by distributing a limited number of rights to scarce resources, private parties can then buy, sell or trade as the market needs dictate. The marketable rights approach retains the certainty of a specific reduction in pollution, while allowing flexible markets to determine the amount of reduction to be achieved by each firm. It also removes the government from difficult, contentious, and lengthy decisions about who can best use the limited resources.

The Clean Air Act Amendments now being considered in Congress³ adopt the marketable rights approach to deal with sulfur dioxide emissions from the nation's utility industry. The Amendments would create a cap on total sulfur dioxide emissions and establish an emissions-credit trading system whereby utilities that cut pollution below their assigned ceiling could bank their credits for later expansion or sell their credits to other utilities seeking to generate more power. Thus, a Western utility burning low-sulfur coal and seeking to

1. Sunstein, *Paradoxes of the Regulatory State*, 57 U. OF CHI. L. REV. 407, 417-18 (1990).

2. Exec. Order No. 11,821, 3A C.F.R. 203 (1974), amended by Exec. Order No. 11,949, 3 C.F.R. 161 (1976) (President Ford); reprinted in 12 U.S.C. §1904 (1977), Exec. Order No. 12,044, 3 C.F.R. 152 (President Carter); Exec. Order No. 12,291, 3 C.F.R. 127 (1981), reprinted in 5 U.S.C. §601 (1988); Exec. Order No. 12,498, 3 C.F.R. 323 (1986), reprinted in 5 U.S.C. §601 (1988) (President Reagan).

3. S. 1630, 101st Cong., 2d Sess. (1990), enacted as Pub. L. 101-549, sec. 401 (Nov. 15, 1990) (adding Title IV to the Clean Air Act, 42 U.S.C. §7400 *et seq.*); see also H.R. 3030, 101st Cong., 1st Sess. (1989).

expand production could buy credits from Midwestern, high-sulfur coal-burning utilities. Those utilities, in turn, could invest in new technology to reduce sulfur emissions from their plants.

One variant of the marketable rights concept is the now legendary "bubble" approach at issue in the famous—or infamous—*Chevron* litigation.⁴ At issue in *Chevron* was EPA's definition of stationary source under the Clean Air Act. EPA adopted a plant-wide definition of stationary source. This enabled a company to modify its plant and add new pollution sources, so long as the company offset those additions with reductions from existing emission points. Interplant offsets also would be possible under a more elaborate bubble scheme.

A variety of monetary incentive approaches may be used as well to promote more environmentally efficient manufacturing. These include effluent or pollution fees. Instead of telling polluters exactly how much they can pollute, polluters would be assessed a monetary fee per unit of pollution. It would then be up to them to achieve an optimum balance between the cost and clean air or water. Other types of monetary incentives include subsidies or tax incentives for pollution control measures and imposition of legal liability for environmental damage.

Yet another alternative to traditional command-and-control regulation is performance standards. By that I mean the replacement of regulations that specify the exact means of compliance with general targets that regulated firms can decide how to meet. Performance standards can reduce compliance costs and provide regulated firms with more flexibility and discretion to discover new and more efficient methods of compliance.

I am sure that there are costs as well as benefits associated with these alternatives. However, one obstacle I hope we have already overcome is the view that it is immoral to establish private rights in environmental resources or environmental pollution. As W.J. Baumol and W.E. Oates stated in their book *Economics, Environmental Policy and the Quality of Life*:

Society has been giving away free too many of its environmental resources too long. It is *not* scandalous to decide that everything has its price; the real scandal lies in setting that price at zero or at some token level that invites us all to destroy these resources . . . Unless we recognize the legitimate role of price incentives for the control of pollution, we may end up with our sense of morality intact but our environment the worse for continued abuse.⁵

I believe that this insight has now finally become part of the accepted wisdom of environmental law and regulation; the question has shifted to how best to implement it. In this regard, I can safely say that the U.S. Government

4. *Chevron USA, Inc. v. NRDC*, 467 U.S. 837, *reh. denied*, 468 U.S. 1227 (1984).

5. BAUMOL & OATES, *ECONOMICS, ENVIRONMENTAL POLICY AND THE QUALITY OF LIFE* 245 (1979).

is in exceptionally good hands. I don't know if it took an harmonic convergence to achieve this but we are fortunate to have two of the nation's leading administrative law teachers and scholars in key implementation positions. Both Dick Steward from Harvard Law School and Don Elliott from Yale Law School have served the Administrative Conference as research consultants. Now they are in a position to practice what they preach as Assistant Attorney General and EPA General Counsel, respectively. They will be joined by David Hawkins of the National Resources Defense Council, a former EPA official, and a leading commentator on environmental regulation. Our first speaker will be Richard Stewart, Assistant Attorney General for the U.S. Department of Justice, Environment and Natural Resources Division.

MR. STEWART: Thank you, Marshall.

Let me try and put our current situation, in terms of tools for environmental policy, in a little bit of perspective. Then I'll talk about the case for economic incentives briefly, the options for the future, and possible implications of economic incentives to deal with the international environmental problems that are deservedly catching public attention.

The command-and-control regulations that are embodied in the Clean Air Act,⁶ the Clean Water Act⁷, and in RCRA⁸ and other statutes dealing with toxics were an understandable, first-generation response to environmental problems. Twenty years ago when the Earth Day explosion of interest in environmental problems came along, there was a perception that urgent things needed to be done, that the mounting increase in pollution needed to be stopped, and that the most effective and appropriate way was to require specific controls on emissions and, later, specific practices for disposal of toxic wastes.

What we see after 20 years is that this system has achieved gains. Certainly the problem without these controls would have been much worse. We have even achieved reductions in some areas from the levels we were experiencing in the past.⁹ So I don't want to denigrate at all the achievements of our existing system.

On the other hand, we have to face up to the fact that we are in this for the long run. We are going to have to live with the need for sustainable development because there will be continuing demands for economic growth and development. Given this need, how can we protect an environment on which we all depend?

6. 42 U.S.C. §§ 7401-7642 (1983).

7. 33 U.S.C. §§ 1251-1376 (1986).

8. Solid Waste Disposal (Resource Conservation and Recovery) Act, 42 U.S.C. §§ 6901-6987 (1983).

9. For example, the United States has significantly reduced air emissions of particulates, lead, and other pollutants, and reduced point-source water pollution discharges; but urban ozone and nonpoint sources of water pollution remain troublesome. See U.S. EPA, OFFICE OF POLICY, PLANNING, & EVALUATION, ENVIRONMENTAL INVESTMENTS: THE COST OF A CLEAN ENVIRONMENT, at § 10 (Nov. 1990) (EPA-230-11-90-083).

I am persuaded that the endless proliferation of command-and-control regulations is not, in general, a workable or appropriate long-run way of dealing with this problem. It is a relatively clumsy and costly approach. It essentially requires central regulators to determine how each of hundreds of thousands of industrial sources shall produce clean air and clean water and minimize the hazards associated with toxic wastes and their processing and disposal.

This typically leads to rather uniform solutions in the regulations, regardless of the fact that some sources can control a lot more cheaply than others. It leads to information overload at the center from the processing of all this information. It tends to limit the solutions that industry can adopt in dealing with environmental problems, typically specifying some sort of end-of-pipe control, or particular reduction in emissions rather than alternatives such as conservation or entire new technologies.

The need for innovation is especially important because we are moving up the cost curve, at least in terms of our large, basic industries. We have, through regulation, tightened things down a lot. If we are going to get more control, I think it is less a matter of still more stringent standards than of encouraging innovation in the private sector. Regulation can do that to some extent, but the incentives for innovation it provides are limited.

In our country, the dysfunctions of centralized regulation are particularly acute. They are acute because we are so litigious. I think this is the tie-in with the Administrative Conference, because central decision-makers are deciding just how industry should produce clean air and clean water and avoid hazardous wastes. In accordance with our legal traditions, those decisions go through a legal process of some formality in administrative rulemaking, typically followed by judicial review. There are large dollars at stake, and industry necessarily invests large amounts in litigating the economic, technological, and environmental issues. Fortunately, we have public interest groups like the NRDC that are on the other side, and still more fortunately, government lawyers who are going to try to produce a sensible outcome. But it is often, from industry's viewpoint, cheaper to invest in litigation and delay than to find innovative ways to comply promptly.¹⁰

The basic case for economic incentives is, first of all, less cost. Using the price system as a signal, you can reduce degradation. Resources are not infinite. There are social costs to dumping things in the air, in the water, and in the ground. But rather than a central planning technique that tells each firm what it should do and some administrators in Washington trying to decide that technique, the idea is to use the price signal, to say to industry, "Here is the cost of pollution, but it is up to you to find out the cheapest way of minimizing

10. Furthermore, compliance means adoption of specified technological controls, locking in today's technologies and retarding creative, new pollution-reducing measures.

that cost.” It will often be that one firm can achieve a lot of pollution control rather cheaply. Under the price system, they will do a lot of cleaning up. Firms for whom it is more expensive to clean up will do less. Overall, the total social cost of achieving any given level of pollution reduction will be reduced under the use of the price system as opposed to more uniform command-and-control regulation. The cost savings can vary, but realistically they can run anywhere from 20 to 30 percent to as much as 50 percent or more.¹¹ Given that the amount that society is actually willing to spend for environmental protection is limited, that means we can get more environmental protection for the same amount of money by using economic incentives.

Second, the incentives for innovation are broader since there are many ways in which sources can potentially comply with the price signal, and their response is not limited by a regulation. They can comply in any way so long as the bottom line—the reductions of emissions, wastes, and discharges—is achieved. So there is the widest scope for innovation. The reductions can be achieved through new processes, conservation, and changes in raw materials, as well as the more traditional end-of-pipe controls.

Finally, from the administrative law point of view, use of economic incentives reduces dramatically the role of central planning by the government. It reduces it whether it is a tradeable permit scheme, a tax, or a deposit and return system—the three basic types of economic incentives. The way these systems work is that the government monitors your output of pollution. It then either imposes a tax, requires you to pay a deposit, or in the case of tradable permits, ensures that you have a permit for each ton that you discharge—a permit you can sell to others so long as your emissions don’t exceed the number of permits you hold.

Monitoring and enforcement is a key element in both regulatory and economic incentive systems; without it there will be cheating and environmental degradation. So there is an important role for government, but what the government is not doing is deciding for each plant how best to achieve and how far to achieve pollution reduction. That is left to be solved on a decentralized basis by plant managers, engineers, and inventors responding to the price system, because people will be rewarded in lower taxes or freed-up tradable permits to sell if they are capable of reducing their emissions. So that whole tradition of “central planning through litigation” is left up to the private sector and burdens on government and on courts are much reduced.

There has been some degree of ideological and intellectual opposition to the use of market incentives. Marshall referred to it—“the market produced the problem, how can it solve it?” . . . the “license to pollute” issue. I won’t

11. See Hahn & Hester, *Marketable Permits: Lessons for Theory and Practice*, 16 *ECOLOGY L. Q.* 361 (1989); Ackerman & Stewart, *Reforming Environmental Law: the Democratic Case for Market Incentives*, 13 *COLUM. J. ENVTL. L.* 171, 175-77 (1988).

deal with those here because I think most people who are at least somewhat familiar with the issue see that regulation is a license to pollute, and a license to pollute for free. Nobody really has the moral high ground here. At least in my view, it is a pragmatic issue about what sort of policy, institutions, and tools are best suited to achieving our environmental quality goals.

The problem from the viewpoint of advocates of economic incentives is that the burden always falls on a new or innovative approach. One can make a theoretical argument—and I think the theoretical argument is quite powerful—analagizing the role that markets play in producing goods and services and wealth and saying that the same techniques, if appropriately redeployed, can also produce environmental health. Although the theoretical argument is quite powerful, I think people in the policy business properly say, “Well, that’s not enough. I want to see it in action.” And what we have is a status quo that is overwhelmingly based on command-and-control regulation.

Nonetheless, we are beginning to have some accumulated, practical experience with economic-based incentives. There has been a limited degree of emissions trading under the Clean Air Act through bubbles and offsets.¹² There have been some problems trying to phase in a limited economic incentive system within a dominantly command-and-control approach, but on the whole the experiment has been successful. Despite some rocky points, there have been significant cost savings with no ultimate detriment to the environment. The lead trading program is another clear success story. In this case, the lead phase-down in gasoline was accomplished far more easily and cheaply by telling all the producers that they had to reduce the lead in gasoline according to a schedule, but those who did better than the basic schedule could sell their excess lead reduction credits to those for whom it was more costly and difficult. On the whole, that worked quite successfully and cut costs by about half.¹³

As Marshall has indicated, in the Administration’s Clean Air Act bill there is a proposal for a similar trading program in excess emission reduction credits among utilities and other major sources of sulfur and nitrogen oxide emissions. This trading program will significantly reduce the cost of achieving the goal of reducing acid rain precursors by 10 million tons. I think the use of trading and its cost savings were an important reason why the Administration ultimately was prepared to cut acid rain emissions. At the much higher price tag that would have been involved in a traditional command-and-control approach, it is not clear to me that we would have gotten nearly so far.

12. “Bubbles” allow existing sources to achieve an aggregate emissions limit by reallocating emissions reductions among several sites within the bubble, rather than cutting emissions by the same uniform amount at each site. This flexibility allows reductions to be undertaken most where they are least costly. “Offsets” allow new sources to enter areas subject to strict emissions limits by obtaining corresponding emissions reductions at existing sources. See Hahn & Hester, *supra* note 11, at 368-71.

13. See Hahn & Hester, *supra* note 11, at 380-91.

Economic Incentives in Environmental Regulation

So I think the developing evidence, when combined with the theory, adds up to a rather strong case for the increased use of economic incentives.

Let me talk briefly about the basic areas where I see the use of economic incentives developing in the near term. The first type of economic incentive is the tradable permit approach. Under existing regulations, people are allowed to pollute up to a certain amount. In many cases you probably want to reduce the amount of pollution, or at least make sure it doesn't increase, so you impose a limit or a cap. But then allow trading, so that those firms that can find new ways to reduce pollution can sell their excess allowances to others. Pollution therefore has a price for everybody that is set by the market. Everybody has a continuing incentive not only to find the cheapest way under existing technology to reduce their own emissions, but also to develop new ways of doing so and turn environmental control into a profit center. Rather than investing in lawyers to litigate over EPA rulemaking, firms can invest in environmental engineers to devise innovative ways to reduce pollution and earn a profit by freeing up excess allowances to sell to others.

The prerequisites for using this tool are that, first, the allowances must describe some performance that is measurable—such as emissions of sulfur or discharges to a water body that can be measured and quantified. Second, you have to have a fairly large number of sources, or at least a significant variation in costs of control across the sources, because you are relying on a market in tradeable permits. Without a sufficient number of players in the market, the possibilities for market power, hoarding and collusion are raised. Third, you have to deal with pollution problems that don't involve local "hot spots"—that is, you have to deal with pollution that has a generalized effect. Acid rain or greenhouse gases are clear examples of pollution that has a generalized effect, in contrast to toxic substances where, if one factory bought up all the permits, there might be a large dose of toxic releases in a limited area with serious effects on the local health and environment.

The Clean Air Act and the lead phasedown are good examples of the use of tradable permits. I would hope to see them extended, at least, to conventional water pollution and, if constraints are warranted, to greenhouse gases.

There have been some innovative proposals at EPA, and I want to commend the administration at EPA for creating a task force on economic incentives. One of the things they have suggested, for example, is that we ought to require more recycled paper in newsprint; but, rather than mandating that everybody achieve a 30 percent proportion of recycled material, they suggest we allow people to trade so that if somebody achieved more than 30 percent, they could sell their excess recycling credits to somebody doing less.

As another example, I can see the day when we might extend trading to pesticides. You can have a pool of risks permits for dealing with pests. Rather

than examining each pesticide on a case-by-case basis as we do now, you would say there are going to be so many risk permits for the whole use of the agriculture industry in the United States, and you might reduce those over time. Farmers could trade risk permits among each other. That assumes you could measure risk in a more quantifiable way than you now can. But I don't see why, if we could do better at quantifying risk, this approach couldn't be extended far more broadly.

A second type of incentive would be taxes. That has been proposed for things like water toxics or for VOC¹⁴ emissions. Where we have achieved a certain degree of control by regulation, the problems of going further with regulation are often severe. Instead, we could use a tax. Again, as with tradeable permits, you need to monitor and enforce.

One feature of taxes that is perhaps troubling, is that taxes might have to be constantly increased over time, in order to achieve the same effect, if you assume continuing economic growth. Under a permit system there are only so many permits; therefore a permit system will achieve a certain level of control if it is enforced. With taxes, the level of control achieved is uncertain but the cost imposed is more predictable.

Third, there are the deposit and return systems. The most familiar example is the system for cans and bottles used in some States. This technique could be used more widely and more powerfully—for example, to deal with hazardous waste. One of the great problems for the government is getting the information to track down the midnight dumper or the person who short-circuits the proper paper path for disposing of or treating toxic substances. Today the burden is entirely on the government to gather the information and to identify deviations. We could have a deposit system where once you have generated a hazardous waste, you pay a large deposit to the Government. That deposit can be returned when either the original generator, or someone to whom it has been transferred, comes to the Government and proves by affirmative evidence that the waste has been properly disposed of and treated. In this way the information burden is shifted to the other side. Lead batteries, pesticide containers, and chlorinated solvents for use in households are possibilities that the EPA task force identified for the use of deposit and return.

Finally, let me talk briefly about the global warming issue as a potential worldwide application. What I have been proposing, and what the Administration has urged in the international fora where countries are now debating possible international agreements on climate change, is an approach different from that currently favored by many advocates who say "let's deal with CO₂¹⁵ first." They urge an X percent cut in CO₂, maybe mandating certain control

14. Volatile Organic Chemical.

15. Carbon dioxide.

measures. Then for CFCs¹⁶, which we have controlled to some degree, they say let's control them some more. And then forests; they'd have a separate agreement. And then they will move on to methane. So they would create a series of regulatory requirements on different aspects of the problem.

What we are proposing as the alternative is a "comprehensive approach."¹⁷ It is scientifically possible to calibrate the relative contribution to potential global warming of the different greenhouse gases. Carbon dioxide is the largest in volume but accounts for a little less than half of the overall effect, because CO₂ molecules are the least potent of the greenhouse gases. CFCs, nitrous oxide, methane, and ozone are all more potent per molecule. In addition, the forests, for example, can either release carbon when they are burned or chopped down and decay, or can absorb and store carbon when they are expanded. One can work out an equivalence among these various contributions to global warming and then one could set for each nation, by international negotiation, its commitment to develop a national strategy or meet a performance goal. Any goals would certainly be a matter of debate. The developing nations want more latitude and a bigger allowance so that they can expand. They believe that the industrialized nations ought to have a lower allowance. But a key advantage to the comprehensive approach is that each country would have the flexibility to decide what mix of measures it wanted to use. Some countries would concentrate more on CFCs, some on CO₂, and others on forests. We would have diversity, innovation, and a less-costly method than a rigid requirement for each particular aspect of the problem.

Where the economic incentives would come in more directly would be international trading. If, for example, Germany invested in Bulgaria in energy efficiency and new energy generation facilities that reduced CO₂ and produced the same amount of energy with a lot less combustion, that would earn a credit against the global climate allowance. That credit might be shared between Bulgaria, where it was actually being implemented, and Germany which was actually providing some of the resources and the technology. Alternatively, the United States might assist Brazil in halting deforestation, and perhaps even in reforestation of some areas. Again, the credit toward the allowance could be shared. This would be a way of extending the possibilities for less costly and more innovative responses, and it would also provide a means for transferring resources and technology, particularly to the developing or less-developed countries, through a competitive marketplace.

16. Chlorofluorocarbons.

17. See Stewart & Wiener, *A Comprehensive Approach to Climate Change*, 1 AM. ENTERPRISE No. 6 at 75 (Nov. - Dec. 1990); U.S. TASK FORCE ON THE COMPREHENSIVE APPROACH TO CLIMATE CHANGE, *A COMPREHENSIVE APPROACH TO ADDRESSING POTENTIAL CLIMATE CHANGE* (Feb. 1991) (available Environment and Natural Resources Division, U.S. Dept. of Justice).

What would this imply for international governance? We would have an international agency that would have to monitor emissions and trades, but the other decisions would be decentralized. What would be the alternative? Presumably there would be some central control body that would also—if we are going to need resources for the less-developed nations—dun the wealthy and hand out the money to whoever applied and caught the favor of this new international agency. It would be an international super-bureaucracy. It would probably need an International Administrative Conference to oversee it.

So it seems to me that there are exciting opportunities in the global arena for economic incentives, as well.

With that, I'll turn it back to the Chair.

CHAIRMAN BREGER: Thank you very much, Dick.

Our next speaker is Donald Elliott, General Counsel of the Environmental Protection Agency.

MR. ELLIOTT: I would like to say that I hereby incorporate by reference virtually everything that Dick Stewart said. I find myself in great agreement with him on the advantages of these types of systems. Let me try to add a few points that he didn't cover to the case for economic incentive systems on the theoretical level. I think the classic case for economic incentive systems has been stated very well by Dick. There are just a couple of additional points I'd like to emphasize, and then turn perhaps to some of the implementation issues with which we are beginning to grapple.

For a long time, I have favored more explicit thinking about incentives in the design of our regulatory systems.¹⁸ It is important to realize that in some sense all regulatory systems are incentive systems. What we are talking about here is designing regulatory systems with more explicit attention to the types of incentives that are created. This is a change in our thinking about regulation that, from my academic post, I always thought we would eventually make, but I felt about it the way I feel about the changes that are now going forward in Eastern Europe—I thought it was inevitable, but I didn't think I'd live to see it. And so I find myself happily surprised to be living in an era in which we seem to be on the verge of enactment of the acid rain sections of the Administration's proposed Clean Air Act Amendments which is perhaps the most explicit move to an incentive-based system.

But, like any person whose favorite theories are about to be turned into practice, I think that puts a very heavy burden on us. We have a big job ahead of us to make sure that these systems are actually implemented in a way that

18. See, e.g., Elliott, *Goal Analysis vs. Institutional Analysis of Toxic Compensation Systems*, 73 GEO. L. J. 1357 (1985); Elliott, *Toward Incentive-Based Procedure*, 69 B.U.L. REV. 487 (1989).

lives up to some of the theoretical promise that many of us have been claiming for them.

It is important to recognize that there are substantial advantages to incentive-based systems in addition to the reduction in cost which Dick Stewart identified. There are a number of studies that have claimed relatively high cost savings from incentive-based systems. There was actually a GAO study a few years ago that claimed equal benefits in the Chicago airshed were theoretically possible for about one-tenth of the cost.¹⁹ So there are very, very large efficiency gains. Many of these gains depend on achieving the most efficient mix of emission limitations rather than uniform emission limitations.

Some of those claims about the greater cost savings of incentive-based systems, are increasingly coming under some scrutiny. An important new article by Oates, Portney and McGartland questions the conventional wisdom that economic incentive systems will have a large benefit in terms of lower cost.²⁰

They point out that some of the traditional command-and-control approaches may over-control. The benefits of over-control need to be taken into account if there are benefits that come from additional controls beyond the standards. In addition, many of the analyses done to date of the greater efficiencies of economic incentive systems don't fully take into account the additional search or developmental costs that are externalized onto the private sector. Dick Stewart referred to this in passing when he said that an economic incentive system puts it to each source, "Well, it is up to you to decide what is the most efficient way to control the costs at your facility." Of course, the cost of deciding what is the most efficient way to control emissions from your facility is a cost, as well, and that needs to be taken into account in the balance.

I suppose it is theoretically possible that one could arrive at an optimal mix of controls on each individual facility by having that decision made on a centralized basis. Dick has called this in one of his articles "Soviet-styled central planning."²¹ This is what we do at EPA when we come out with emission-limits although generally under the Clean Air Act the states do it under a Federalism model. Dick's point—and it is certainly valid—is that the government very rarely arrives at an optimal mix in practice.

19. U.S. GENERAL ACCOUNTING OFFICE, A MARKET APPROACH TO AIR POLLUTION COULD REDUCE COMPLIANCE COST WITHOUT JEOPARDIZING CLEAN AIR GOALS, 11, at 32 (PAD-82-15A) (Mar. 23, 1982)(Anderson study of NO_x in Chicago shows least cost solution of \$21 million annually versus \$254 million for a crude command-and-control approach based on simple rollbacks; overall, GAO concludes market-based approach could save "about 40 percent to 90 percent").

20. Oates, Portney, & McGartland, *The Net Benefits of Incentive-Based Regulation: A Case Study of Environmental Standard-Setting*, 79 Am. Econ. Rev. 1233, 1240-42 (1989).

21. Stewart, *Economics, Environment, and the Limits of Legal Control*, 9 HARV. ENV'T'L. L. REV. 1, 6 (1985).

However, the real savings through an incentive-based system are not so much in the short-term cost savings but in several other areas. I don't want to be misunderstood. I think there are definitely, in practice, substantial short-term cost savings. But we have to be careful that we don't oversell the cost aspect of market-based systems and overlook several other very distinct advantages to making greater use of incentive-based systems.

I want to mention three of these additional advantages on a theoretical level and then turn to some of the practical implementation problems we face. One of the things that appeals to me about incentive-based systems is that we are nearly at our capacity to deal with the management of a complex economic system through the information processing capability of the government. Increasingly, as we look ahead, we are going to be talking about regulating large numbers of small sources because many of the larger sources have been regulated.²² One advantage of using a decentralized market system is that it has the ability to deal with the small source problem in a way that I'm not so sure the technique of bureaucracy is really capable of doing.

The second, and in my mind the most compelling, advantage for the incentive systems is the dynamic advantages. The history of pollution control in the United States suggests that rather than simply controlling pollution we need to be *preventing* pollution by substituting inherently less polluting technologies for those that are more polluting. This is a subject that has been discussed recently by Barry Commoner, among others.²³ He suggests that the gains we have made through environmental control to date, while very real, are modest and that we could do more by substituting inherently less polluting technologies. The future of environmental protection is going to have to involve pollution prevention, and incentive-based systems are probably the most realistic way to move to a pollution prevention focus on our environmental programs.

The point here—which Dick alluded to—is that under a traditional command-and-control system, once an emission limitation or standard has been set, there is very little value to developing a technology which will reduce emissions below that level. So one of the major advantages of an incentive system is it provides continuing incentives for dynamic innovations for developing better ways of doing things which are inherently less polluting.

The third advantage I would mention of incentive-based systems is really a political advantage. This has not been as well understood in the past as it is beginning to be. It is probably not a coincidence that the political logjam in the acid rain debate was finally broken by a move to a more incentive-based system. In part, that was because much lower costs were projected. But in my

22. See Blake, *The Economic Impacts of Environmental Regulation* 5 NAT. RESOURCES J. 23, 56 (1990).

23. B. COMMONER, *MAKING PEACE WITH THE PLANET* (1990).

view, in part it was because an incentive-based system states a relatively more neutral principle that people can abide by as a basis for making some of these decisions.²⁴

I would think that some of the political advantages of incentive-based systems may also be a reason that they will have great appeal over the long run in terms of the negotiations over the global climate change issue. We have one concrete example of how that might work. If we were to make a uniform pledge to an X percent reduction in CO₂ worldwide, that would have very predictable and differential effects on individual countries. Countries like China, which have large indigenous resources of coal, would find it very difficult to meet that pledge in comparison to other countries. On the other hand, a system of incentives of the type that Dick discussed might give countries a good deal more flexibility to deal with the problem in a way that does not have clear winners and losers, but has a more level playing field. Therefore, I think there are great advantages to incentive-based systems as a way of dealing with some of these political issues.

There is, however, a very important point which needs to be thought about as we move forward in this area, and that is how to allocate the benefits. Who gets the efficiency gains that come about from creating a more efficient system? That is one question that we are really beginning to think and debate about in the policy process.

As we talk about incentive-based systems, though, it is also important to look at incentives on the players within the regulatory process, as well. This is something that the Administrative Conference probably ought to be thinking about. There is a developing literature about how to design administrative systems with greater sensitivity to the incentives that are created. Again, Dick referred to this in passing when he talked about the difficulty of getting people to produce information.

David Roe, a law school classmate of mine who is with the Environmental Defense Fund in Berkeley, wrote a very fine article looking at Proposition 65 from this perspective.²⁵ Without endorsing everything that is in Proposition 65, the approach certainly illustrates a mechanism for using incentive-based systems to make the regulatory process work. The argument that Roe made is that rather than giving industry and government an incentive to delay the production of information, as we do in many of our traditional systems, we could try to turn the system around so that people would have incentives to come forward with information relating to safety rather than to withhold it.

There are a number of techniques and regulatory systems that are currently being developed that do that. I'm very sensitive to that in my role at EPA.

24. Cf. J. RAWLS, *A THEORY OF JUSTICE* (1971).

25. D. Roe, *Barking Up the Right Tree: Recent Progress in Focusing the Toxics Issue*, 13 COLUMBIA J. OF ENVTL. L. 275, (1988).

We miss a large percentage of the statutory deadlines that the Congress imposes on us,²⁶ and then David gets to sue us and put us on a schedule. One of the few that we haven't missed so far is under the RCRA standards where basically RCRA had what are called "hard hammers" built into it. Congress stated that on a date certain all land-based disposal of waste would be banned unless prior to that date EPA developed standards for what safe levels of treatment would be.²⁷ Again, I don't want to appear to endorse the specifics, but the general approach is an interesting alternative to traditional statutory deadlines enforced through litigation. Again, it illustrates the opportunity for rethinking the regulatory process with the incentives for the players in mind.

As we go forward to think about incentive-based systems in the future, we need to pay more attention to two things. First, to creating the dynamic incentives for technical innovation, because in the long run the real progress is made by substituting inherently less polluting and less wasteful technologies for those which are more wasteful. Second, we need to pay attention to trying to create incentives to make the processes work better.

Let me turn to a few of the implementation issues that we are now confronting. The first problem that we face is how to make sure that in implementing an incentive system we don't so encumber it with bureaucratic requirements that, as a practical matter, trading doesn't take place in the optimal way that it could. A lot of the academic criticisms of EPA's emission trading system in the past has criticized the agency for imposing so many bureaucratic requirements and safeguards that trading couldn't really take place.²⁸ One of the key, low-visibility issues that will take place in the next year or two under the Clean Air Act Amendments is EPA's development of the implementing regulations. This is a major challenge because if we don't do a good job of developing regulations, and the acid rain trading program, therefore, doesn't live up to expectations, there is a great danger that market-based systems could be discredited for many years to come. So we have a great responsibility to make sure that the system works.

The other aspect that is very much on my mind and the minds of other people in the agency is how to make sure that a trading system like that under the acid rain program is meshed into and made consistent with the other requirements of the act—particularly in the case of EPA's PSD²⁹ requirements for no significant increases in pollution. If you simply look at one pollutant like sulfur dioxide in terms of acid rain, it is easy to come up with a scenario

26. ENVIRONMENTAL & ENERGY STUDY INSTITUTE AND ENVIRONMENTAL LAW INSTITUTE, STATUTORY DEADLINES IN ENVIRONMENTAL LEGISLATION: NECESSARY BUT NEED IMPROVEMENT (Dec. 7, 1985) (available from EESI, Washington, D.C.)

27. See R. FORTUNA & D. LENNETT, HAZARDOUS WASTE REGULATION—THE NEW ERA: AN ANALYSIS AND GUIDE TO RCRA AND THE 1984 AMENDMENTS (1987).

28. See Hahn & Hester, *Where Did All the Markets Go?*, 6 YALE J. REG. 109 at 141, 146-51 (1989).

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which presents a much lower-cost solution to the problem: by allowing emissions to increase at one facility in exchange for decreases at others that can make the decreases more efficiently, you have a netting out. In fact, however, the Clean Air Act is a much more complicated statute than that. It has multiple goals. One of the challenges that we are going to face is how to make sure that all of those provisions of the law are harmonized in a way that meets the requirements of law.³⁰

The last point I'd like to allude to goes to the complexity, in a sense, and also to the license to pollute point. For a long time, I have been persuaded by the notion that it was no more immoral to sell the right to pollute than it was to give it away for free,³¹ but there are many people who are not. It is important to recognize that we don't have to have—and we don't have—an all-or-nothing system in which we have either an incentive-based system or a health-based system of command-and-control regulations.

Many of our environmental problems, like many of our other legal problems, involve a complex coming together of different goals and different moral norms. The system cannot simply optimize any single value—like controlling the total amount of pollution at the least cost—but must be responsive to multiple values. Multiple goals call for hybrid systems, in which we set a mandatory limit on the amount of pollution that can be emitted—to limit risks to health. But we also need to make sure that we provide dynamic incentives in the long run to develop technologies that reduce the pollution below those mandatory levels. Thus a combination of health-based standards and market-based incentives may be preferable to either standing alone.

So I would suggest that it is probably not going to be an either/or between incentive-based systems and limitations that are set on either a health-based basis or a technology-based basis. It is much more likely that we will have a combination of the two approaches. That, in fact, is what we have got in the Clean Air Act and probably what we will continue to have.

CHAIRMAN BREGER: Thank you. As our final speaker, we have David Hawkins from the Natural Resources Defense Counsel.

MR. HAWKINS: Thank you.

Actually, Don's last comment was an almost perfect lead-in to my first comment, which is that ecologists preach diversity. Diverse systems are strong systems. They are resilient systems. They are able to deal with the unexpected, which is almost what everything that has to do with our natural systems and what human beings are doing to our natural systems can be

30. See, e.g., *Wisconsin Elec. Power Co. v. Reilly*, 893 F.2d 901 (7th Cir. 1990), and *Puerto Rican Cement Co., Inc. v. E.P.A.*, 889 F.2d 292 (1st Cir. 1989), which upheld the broad reach of the PSD "modification" provision, raising concerns that a utility pollution control project undertaken to comply with the acid rain provisions of the new Act may subject the utility to the rigorous PSD preconstruction review requirements.

31. See Ackerman & Elliott, *Air Pollution "Rights,"* N.Y. Times, Sept. 11, 1982, §1, at 23, col. 2.

characterized by—the unexpected. So, as a practitioner of ecology, although not trained in that discipline, I am an enthusiast for diversity, and that goes for control efforts, as well. One of the elements, therefore, for control efforts is to incorporate incentive systems.

I also agree with Dick Stewart's comment about the pragmatic basis for incentive systems. That is the judgment that we want to apply to incentive-based systems. Will they work? And will they work better, or are they likely enough to work better that it is worth experimenting with them given the inevitable rough spots that one always encounters in experiments?

To mention another point that both the previous speakers have mentioned, there exists the question of which is morally superior—to sell rights for a price or to give them away? I guess I would pose the question differently and say that the issue doesn't revolve around rights to pollute; the issue revolves around temporary permission.

One of the concerns that I think practicing environmentalists have had with a market-based system is getting the ground rules clear. Assigning a price to these temporary permits to pollute—temporary grants of permission to pollute—does not convert them into rights. It is easy in a market-based system, when one has paid a price for something, to give it the attributes of other things that one pays a price for and to turn it into something of more permanence—something that the government might be expected to compensate one for as a taking, for example, if it decided to further restrict it.

Given the fact that the history of environmental protection is an increasing realization that what we thought was an adequate or tolerable level of pollution 20 years ago is no longer a tolerable level of pollution today, I think it would be very dangerous to put in place any system that created legal rights to a given level of pollution. I don't think it is necessary, either. I would point out that in the acid rain legislation there is explicit language, which we reviewed very carefully in draft form several times before it saw the light of day, stating that the allowances to emit sulfur dioxide are not legal rights, but rather constitute temporary permission to release these pollutants and that they can be further reduced by action of the Government consistent with traditional actions of the Government.³² It is very clear, in our view, that these allowances should not be accorded a status of rights such that a taking would occur if they were further abridged. In our view, pollution is a nuisance and ought to continue to be regulated as a nuisance whether through command-and-control methods or economic incentive methods.

Let me touch on what I think are some of the key issues, a number of which the previous speakers have already flagged, and I'll just try to give my own spin on them. There are dangers of over-selling economic incentives.

32. Clean Air Act Amendments, Pub. L. No. 101-549, sec. 401, § 403(f), 104 Stat. 2399, 2591 (1990).

People are still going to resist changes. Where they resist them, in the case of an incentive-based program, may be in the setting up of the system in the first instance, since people can see ahead. Those who can foresee that the incentive system being established will require them to pay or change their behavior, or both, are going to try to get the ground rules adjusted so that they have to do less of any of those things. If everybody does that, you'll wind up with a fairly bloated system—one that is based on inflated currency, one that won't do the job environmentally.

Next, these systems can be improperly applied. Dick Stewart has mentioned a number of criteria for proper application, and I would agree with several of the points he mentioned. I would like to just touch a little bit further on some of them. One of them has to do with the scope of the market, and whether the scope of the market is geographically consistent with the environmental protection objective that one is seeking to implement. With each of these points I would like to contrast a couple of proposals, both of which were contained in the Administration legislation proposal on the Clean Air Act³³ that was submitted almost a year ago.

One is the acid rain proposal.³⁴ The NRDC feels that the acid rain program is an implementable example of the incentive-based system. The other proposal that was contained in the same bill was something that was called the market-based alternatives for automobile pollution control³⁵—one that we feel would not have been implementable. I'm using the past conditional there because, thankfully, I believe that one has met its demise.³⁶ It is greatly restricted from what was originally submitted by the President.

You have had an accurate description of the acid rain program. Let me give you a brief description of the market-based alternatives for automotive control. Essentially, the original Administration bill established a set of tailpipe standards for new cars—ones that we felt were inadequate—and a set of alternative fuel requirements or programs for the manufacturers of new vehicles and the refiners—one that we felt was quite aggressive and deserving. And then it overlaid on top of those two, in effect, a national emissions target that could be traded by fuel refiners and automobile manufacturers. Any manufacturer or any fuel refiner could submit a proposal to EPA for an alternative control level for its activities, provided that the national emissions associated with the combination of fuels and automobiles didn't change.

It sounded nice in theory but, in fact, what it meant was that an automobile maker could have proposed to sell dirtier cars in Chicago in return for selling

33. H.R. 3030, 101st. Cong., 1st. Sess. (1989) (as introduced); for summary of bill as introduced, see 101 CONG. REC. H4448 (daily ed. July 27, 1989).

34. *Id.* adding Title V., at H4452.

35. *Id.* §218 at H4452.

36. This proposal was deleted in committee. See Pub. L. 101-549, 104 Stat. 2399, 2471 (adding Title II to the Clean Air Act.)

cleaner cars in New York. That is something that might have been satisfactory to the citizens of New York, but probably would not be to the citizens of Chicago. Similarly, cleaner fuels could have been sold in one area and dirtier fuels in another area. The point here is that it was an attempt to apply the incentive-based system to address a problem that was not regional but rather more local than regional. And only an economist could argue that more pollution in Chicago was somehow compensated for by less pollution in New York. There are different human beings with different sets of lungs breathing these compounds in the two cities.

Now, the distinction with the acid rain program is important to note. One of the reasons why the acid rain trading program can work is that these pollution allowances are, from an ecological standpoint, fungible in the context in which they are being applied. The pollution allowances for sulfur dioxide are not the only regulatory regime for sulfur dioxide that will apply to these individual power plants. The plants will still be required to protect against localized high concentrations of pollution that may cause health effects or may cause other local environmental impacts, because this program is an overlay on a pre-existing program.

It works to allow them to trade back and forth because they will not be allowed to trade from zero to infinity. Rather, they will be allowed to trade in a range where the threshold for protection against localized effects has, at least in theory (and to the extent the law is enforced, in reality) already been achieved. So in the acid rain program, the residents of one locality are not being asked to trade off their benefits against the benefits of the residents of another locality—something that is exceptionally important, we believe, in a democracy where each voter expects that his or her rights are going to be protected in the national pollution abatement laws.

Don had mentioned the interrelationship between the PSD³⁷ program and other programs. Again, there has been a lot of industry argument about perhaps relaxing the constraints of the PSD Program because there is an acid rain program which, after all, is going to be bringing total regional emissions down. Marshall, in his introductory notes, pointed out that perhaps this program would allow a Western power plant operator to build a new plant in the West and get compensating emission reductions from a cheaper source to control in the Midwest.

Those are examples, in my view, of a misapplication of the concept because they don't reflect the local impact versus the broad, regional impact. Indeed, one of our criticisms of the bills in Congress is precisely that they will permit new power plants to be built in the Western United States and be able to get

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emission reductions from the Midwest.³⁸ We think that fails to recognize one of the important environmental values that we're trying to protect in our air quality legislation—preserving high-quality environments where they exist.

In the Rocky Mountain West we have vistas which, in an industrialized nation, are almost unique on the globe. You can see for over 100 kilometers in the Rocky Mountain West today. You cannot do that in many other industrialized nations of the world. We would like to keep the Western visibility as high-quality as it is today, and we would like to prevent there from being a degradation of this visibility which could occur in an improperly implemented national trading scheme.

So, again, it is important to look at the constraints on this, and it brings up the issue of discipline.

Any constraint will be seen as creating a tension with the efficiency, if you will, or the cost savings that could be achieved if the constraint were not there. And one of the tests of economic incentive programs will be whether the regulatory and political systems have the discipline to continue to respect these restraints and the need for the restraints in the face of what will be continued agitation for relief from those restraints.

Let me mention another point, and that is the basis for the initial allocation of the allowances. This is a key issue. In the acid rain control program, Congress is deciding, outside and independent of the trading system, what the level of control will be, what the total amount of pollution allowed into the ecosystem will be.

This is very different from another model which has been mentioned, the emission trading or bubble concept. Using this concept, EPA tried to attach to an existing regulatory program the opportunity for individual polluters in a dirty air area like Washington, D.C., or Los Angeles, to reduce their emissions further than currently required by regulation in return for some "compensating" relaxation at some other pollution source.

The problem with that system is the basis for the initial allocation. The initial allocation to those various polluters in the urban areas like Washington, D.C., in almost all cases has been technology-based. Either on a categorical basis or an individual plant basis, a level of control has been chosen that does not represent the optimum needed for environmental protection. Instead, in most cases, the level of control reflects a compromise based on political, economic, and technical arguments. It is essentially what the regulators were able to squeeze out of that particular source at that particular time. Having done that, then when you overlay the emission trading system, polluters are in effect, able to take a second bite at the apple and go for further relaxation at

38. See S. REP. No. 228, 101st Cong., 1st Sess. 410 (1989).

facilities where you have just finished negotiating a level of control that represented that level that you were able to get.

This creates a further problem when you look at it prospectively because if you have this sort of individually-negotiated or categorically-negotiated control level where the people that are implementing the trading system are also the decision makers on what level of control each industry is going to have to achieve, you have created an incentive for the companies to weaken the future presumptive levels of control. There is jargon for it in the Clean Air Act. It is called "reasonably available control technology." Unfortunately, reasonably available control technology is not an Archimedean fixed point. Rather, it is something that is decided on in very subjective ways by human beings.

When you have a trading system, it doesn't take the traders very long to realize that the more lenient the level is established, the greater room for trading exists. And so you create a new incentive to establish these presumptive levels of control at a lenient level in order to maximize the opportunity for creating trading credits.³⁹ This is a problem that is avoided in the acid rain control legislation because Congress is setting up the level of control ahead of time, and this is key.

If I could mention information systems, I would add my voice to those that have pointed out how important such systems are. We think the acid rain program will work because we are dealing with one of the simplest of information collection systems that you are going to find in the real world. We're dealing with a finite number of very large sources. The government has more information about these electric utility pollution sources than it has about most other sources of pollution. For one thing, we know who they are, what their names are, who owns them, and what their throughput of raw materials is—something we don't know about all the other polluters in nearly as great a degree.

Another, very important point is that the pollution being monitored is coming out of a stack. This means it is technically susceptible to actual measurement, something that is not true of a number of our other pollution problems—particularly those that go by the interesting name of "fugitive emissions." Fugitive emissions are released from valves and flares and windows of buildings. Fugitive emissions are essentially things that are not released through a confined opening in which you can stick a probe and actually get a reading of the total volume of pollutants being released. Those types of emissions are estimated. They are never measured.

Where there are estimates, there are opportunities for creating trades that, in fact, don't reflect reality. Now, there are ways to compensate for this. One

39. An example of a similar type of problem would be in the currency market where the unlimited printing of money leads to inflation and a devaluation of the currency.

can set up ground rules where, in effect, assumptions are made that transfer any uncertainty to the benefit of the environment. Unfortunately, the systems that have been put in place to date have not had the discipline or the political will to create those kind of assumptions. Instead, many games were played where the companies' engineers were able to make assertions about the performance level before and after an emission reduction on a system that was not susceptible to monitoring and get the benefit for themselves.⁴⁰

This is a variant on that old joke of the person looking for his lost wallet under the street light, and, upon being asked, said, "No, I didn't lose it here, but the light is best here." The variant here is that they are looking for the wallet where the streetlight is out because the place where the information is the least available is the one where there is the greatest opportunity to come up with an economically attractive transaction.

Again, the acid rain program has a fix on this. It requires continuous emission monitoring. The point that Don mentioned about creating incentives has been noted in the design of the specific legislative language here. The language of the bills specifically state that when the monitoring system is not working the source will be presumed to be emitting at an uncontrolled rate.⁴¹ That is a very important provision. That means that there is an incentive to have those monitors work all the time because, if they are not working, the source's emissions will be presumed to be quite a bit higher and will start eating up credits. Just imagine the taxi meter spinning around at triple speed. So this is very important and a good example of how to design a program that has the maximum chance of working.

Another point I would mention is that creating a market system is ambitious because you need to create a closed system. You can't have some people in the system and some people out of the system. This is reflected in the design of the acid rain bill by the establishment of a cap on the total amount of pollution for the electric utility industry.⁴² The Administration bill, as first introduced, established a cap for new sources—something that we were very supportive of. The Administration deserves a lot of credit for having preserved that.

I observed an interesting dynamic develop in the course of the Senate handing out of allowances within this cap—maybe another good example of how to create a critical mass in support of a limitation on total industry emissions. Some electric utility systems operate primarily clean units. A more

40. See ENERGY & ENVIRONMENTAL ANALYSIS, REVIEW OF 37 PERMITS APPROVED UNDER EPA'S EMISSIONS TRADING POLICY (Jan. 1986) (available Env'tl. Energy Analysis, Arlington, VA.)

41. Clean Air Act Amendments, Pub. L. No. 101-549, sec. 401, § 412(d), 104 Stat. 2399, 2624 (1990).

42. The cap keeps the system closed by limiting to a statutorily defined level total SO₂ pollution from all electric utilities. Thus, when a new electric power plant is built, it must acquire pollution allowances from existing plants. See *id.* sec. 401, § 403(a), 104 Stat. 2399, 2589 (setting SO₂ cap for utility industry at 8.9 million tons per year).

correct term would be "less dirty," but we'll use the jargon of "clean." Others operate very dirty systems. The problem of allocating these initial allowances to these different electrical systems, as you might imagine, is one where the political art has been practiced in its most subtle forms, and the lobbyists for every single utility system have been active on Capitol Hill promoting apparently neutral ways of reallocating these things. They understand precisely the implications for their companies. They may understand the implications for other companies. They probably don't understand the implications for the rest of the country—nobody else does, either. But, as you can imagine, they are all marching around trying to get particular Members of Congress to come up with a reallocation formula that will best advantage them.

An interesting thing developed. I can't say that it was intentional, but it had some interesting fruits. The cleaner utility companies managed to get allocations which, in effect, are giving them more allowances to pollute than they currently need. Their current emissions are below the number of allowances that they are being given under the bill. Interestingly enough, when enough of those companies got those bonus allowances we detected a distinct disinterest on their part in attacking the concept of a cap on total emissions because if a cap disappeared, the value of those bonus allowances would have been diminished. So, in effect, by giving them a handout, those companies got a stake in the closed nature of the system, and a political consensus, perhaps, to keep it a closed system was made possible.

A final point I would make is with respect to the *Chevron* case that Marshall mentioned.⁴³ In our view, again, this is a mistaken example of the incentive system because it doesn't meet a number of the attributes that I mentioned, particularly, the way in which the original initial allowances are created.⁴⁴ Perhaps it seems hard at first to say, "Well, why should an environmental group object when a firm wants to expand at an existing plant site if it proposes to do so by reducing emissions from the cheapest, easiest sources of remaining emissions at the plant site provided that there is no net increase in pollution?" Well, our response is that there is an opportunity cost, an environmental opportunity cost, that is very large when that transaction occurs. It is an environmental opportunity cost because there are only a finite number of easy, cheap, and technically obvious emission reduction opportunities in our polluted cities. I would hope that would be obvious on reflection, deriving from the fact that these areas are still polluted.

If we had a long list of easy, cheap, and politically attractive things to do, we would have done most of them and we would have less pollution in the air today. The reason that we have as much pollution as we do is that the regula-

43. 467 U.S. 837.

44. See *supra* note 4 and accompanying text for discussion of case.

tors are having a hard time identifying a sufficient number of cheap and attractive things to do.

So, you say, "Well, let's create an incentive for the industries to identify those." The problem is that if you create an incentive that lets the industry identify them and then dedicate the benefits to compensating for a poorly-controlled new unit, you have skimmed the cream from the attractive emission reduction opportunities. Instead of being dedicated to making progress towards an overall reduction in pollution from the area, the benefit is being dedicated, to a total or large degree, to compensating for an emission increase at a new facility that could have been avoided because technology was available to have that new facility better controlled.

Moreover, if one is searching for an incentive, we think there are much more effective incentives, such as emission charges, that should be applied in areas that are not making adequate progress toward meeting the public health standards.⁴⁵ This is something that we have proposed, and we thought we would be able to be successful with it, perhaps by proposing it as a fall-back in the legislation now before Congress. Essentially we had said, "Let's set up a reduction track, a progress schedule for reducing pollution in the dirty air areas, and if areas fall off that progress schedule, let's kick in an emission charge system." Well, that got watered down to the point where it now only kicks in 15 years down the road if an area actually fails to meet the final public health standards, and then it kicks in only for the last 20 percent of emissions—that is, if you can show that you are emitting at a level no greater than 80 percent of your mandated level, then you are exempt from the fee.

This is exactly the kind of design that has that perverse incentive that I mentioned before. It creates an incentive for the polluter to negotiate out a mandated level of control that has a 20 percent margin of safety in it. What you could wind up with is a bunch of regulations that allow 20 percent more pollution than they otherwise would have because it will be an easy way for the individual sources to be exempt from this emission compliance fee.⁴⁶

These are critical design issues. It is very important that we recognize that, to the extent these incentives are successful, it is because they will be powerful. To the extent they are powerful, there are going to be lots of people looking for ways to make them less powerful. We have to keep our eye on the ball and not regard this as a panacea.

45. If an area remains polluted despite industry compliance with regulations, then regulations are not sufficient to achieve the objective of clean air. Thus, there is a need to go beyond existing regulations. One method of providing an incentive to go beyond regulatory requirements is to impose a per ton fee on emissions, whether or not the plant is in compliance with regulations.

46. The final version of the Clean Air Act Amendments corrected this design flaw by changing the language of the provision. The final version requires that a fee be charged in nonattainment areas for emissions in excess of 80% of actual or allowable amounts, whichever is less. Clean Air Act Amendments Pub. L. No. 101-549, sec. 103, § 185, 104 Stat. 2399, 2450 (1990).

For me, the question is: will the system have the discipline and the maturity to move forward on incentive systems and respect the restraints that are necessary to actually make them deliver effective environmental protection?

Thank you.

CHAIRMAN BREGER: Thank you.

Now, I thought we'd go to questions from the audience and then give a chance to the participants to wrap up.

QUESTION:⁴⁷ This is a question for any of the panelists.

One point that did not come up on the acid rain program is that the utilities and public utility commissions wouldn't want to take a chance on this and there would be a lot of hoarding in the system because utilities would retain these for future growth. I think Congressman Dingell at one point expressed a lot of skepticism about the ability of the acid rain program to work primarily because he was concerned that utilities, by nature, are conservative.

Do you think that is something that could potentially be a problem in this system or in other similar type of economic incentive situations?

MR. HAWKINS: The question of hoarding has certainly been raised. Because the companies are regulated, the answers may be different for a regulated industry than they would be for a non-regulated industry.

But there are some specific examples in the electric utility industry of behavior that is inconsistent with this hoarding scenario. Most specifically, an example is the sale of bulk power. Utilities, in particular in the Midwest, are engaging in the sale of excess capacity, if you will, to out-of-region utility customers. For example, in this area PEPCO⁴⁸ has a 20-year, long-term power sales agreement with Ohio Edison to purchase the equivalent of 400 megawatts of power. That is a sale which was agreed to both by the Ohio regulatory commission and the Maryland regulatory commission. Interestingly enough, one of the clauses in the sale agreement provides for PEPCO customers to pay a pro rata share of any acid rain control liabilities that Ohio Edison may encounter. The sale contract also provides for Ohio Edison's right to retrieve some of that excess capacity in the event that its margins fall below a predefined level. Thus, it is possible for contracting parties to write in provisions to cover contingencies that would otherwise discourage them from making long-term commitments. I would expect we'd see precisely the same type of contract drafting in the emissions allowance area.

Another point has been raised by those that are trying to get into the electric utility business—the independent power producers, municipal utilities, and the American Public Power Association among others. They have pointed out that, in their view, the investor-owned utilities have engaged in what they might

47. Julie Edelson, "Inside EPA."

48. Potomac Electric Power Company.

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charitably call anti-competitive behavior—trying to keep them out of the market, hassling them over transmission rights, and so on and so forth. They argue, “Why won’t these utilities do exactly the same with respect to emission allowances? An independent power producer doesn’t have any electric utility generating stations now. Therefore, it doesn’t have any allowances; it doesn’t have any pollution reserve to draw on. It has to buy them from these predators. Come on. That’s unfair.”

Well, the interesting thing about the regional trading of emission allowances is that it doesn’t respect the service area boundaries. Let’s suppose that Allegheny Power System, in fact, would not look favorably on a competitor in the West Virginia transmission corridor, but an electric utility down in Georgia, Georgia Power, doesn’t care about a competitor locating in the West Virginia corridor. They’d be perfectly happy to sell an IPP⁴⁹ that wants to locate out of their service area, allowances that might be necessary for them to build a new plant. And they don’t have the same kind of leverage because they don’t have any physical facilities that they have control over, such as transmission lines.

So I think our view is that hoarding may occur in the early years. There probably will be some conservative behavior. But one of the things about pollution control methods is they are fairly lumpy and they will tend to produce surpluses. Those surpluses will either sit there, or sooner or later someone will recognize that there is an economic value associated with them. They can be leased, they don’t have to be alienated forever, and that’s probably what is going to happen with them.

MR. STEWART: Just a more general point—I think that is an excellent answer on the Clean Air Act—is that if the market is broad enough you should expect reasonably competitive behavior. If the number of players is large enough, it is very hard for any individual to monopolize or for a group to do so through agreement. Now, there are always possibilities, with any scarce resource, that such anti-competitive behavior can go on, but the antitrust laws are there to deal with that.

The other point I think is that regulation of the traditional sort is often used for anti-competitive purposes. Particularly the effect of more stringent regulation on new sources, which can be justified, in part, on environmental grounds, but can also be used, and the requirements written in a way to exclude new competitors. So I think on balance we are going to see more, not less, competition as a result of this move to economic incentives.

CHAIRMAN BREGER: Other questions?

49. Independent Power Producer.

QUESTION:⁵⁰ It is important to measure these market-based approaches against how the Clean Air Act works in reality and not how it is conceived to be working in an ideal form. The problems that Dave Hawkins was referring to, about how you measure credits in an area where you are trading under administrative discretion rather than under a fixed statutory baseline, are equally true with respect to regulation. If there is an incentive to resist a tight control, there is an equal incentive to resist that control whether or not you have an incentive system operating. In fact, you may never know of the chance to get a cheaper equivalent reduction without an incentive that encourages someone to step forward. I could expand on that, but I think I'll pass.

I'm struck by the schizophrenia in the current versions of the pending Clean Air Act, the Senate-passed version, on the one hand, and what is going on in the House, on the other. In particular, the way the original Administration bill was structured. That is, we have a major attempt to put a nationwide, market-based approach in place for acid rain. There are other instances in which location is equally irrelevant, and the same approach was attempted. But what we have is an increasing trend towards centralization and prescription in areas like ambient ozone non-attainment and areas like the control of air toxics, and, in fact, situations in which different titles of the Act appear to be about to collide with one another. I'm thinking of things like the ability of the air toxics title to wipe out any flexible approach on an area-wide basis to deal with percent reduction which is prescribed to deal with ozone attainment purposes. I'm also thinking about the possibility that the Air Toxics Title could and may still wipe out a lot of the flexibility for electric utilities to trade under the acid rain title. My question is: How is EPA proceeding to analyze these different provisions so that it can harmonize, as Don put it, the different titles in a way that will allow flexibility with sufficient safeguards, but still have a workable system?

MR. ELLIOTT: Let me just say that I agree with the first part, the comment that in this area we have to be very careful that we don't compare apples and oranges. There is a great term for this that has been invented by Howard Latin at Rutgers-Newark. He calls this "selective realism."⁵¹ When we make the comparisons between an economic incentive system or a command-and-control system, there is a great temptation on both sides in this debate to compare an idealized version of one of these systems with a real version of the other. This happens in both instances.

As far as the difficulties of harmonizing an incentive-based system with the structure of the Clean Air Act, I think that is going to be one of the major implementation challenges that EPA is going to be facing in the next five years.

50. Michael Levin, Chair of the Clean Air Working Group's Task Force on Market-Based Incentives.

51. Latin, *Activity levels, Due Care, and Selective Realism in Economic Analysis of Tort Law*, 39 RUTGERS L.R. 487, 503 (1987).

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So I guess the answer to your question of how we are doing it is: very thoughtfully, very carefully, working very hard on it, doing the best we can. It is very important to recognize that we have not gone completely to an incentive-based approach in the Clean Air Act.⁵² As Dave Hawkins identified with some care, we have a situation in which there are multiple goals and objectives that are reflected in the Act—for example, protection of visibility. We are not talking about the Act as it presently exists. It is likely to be amended by Congress. The notion is not simply to reduce acid rain as your sole goal at the least cost, but that's one of the goals. There are multiple other goals that are reflected in the Act.

I think that as long as there is no amendment which gets rid of the other systems that are in the Act, the obligation that is going to fall on EPA through the rule-making and implementation process is to try to implement the acid rain trading program to get the maximum amount of efficiency and flexibility that we can get. At the same time, we must continue to be respectful and preserve the other goals that are built into the statute. To some degree, these may be in tension. There is not an unlimited commitment by the Congress to an incentive-based system, but the incentive-based system on trading acid rain has to be harmonized with the other provisions of the Act which have other goals.

MR. STEWART: Let me just put a footnote to that. There are the constraints in the other parts of the statute. In some cases those constraints may be appropriate—as Dave Hawkins was talking about, pristine areas in the West and maintaining high visibility. But there are a lot of PSD areas in the country that can't be justified on those grounds. One of the reasons for PSD was to protect exceptionally scenic or pristine areas, but another was to limit total loadings of pollution.

Now, if you have an alternative system—an economic-based incentive system addressing the total loadings problem in an efficient and effective way—then we may reexamine some of the constraints. All of the constraints in the existing Act may not be justified, and the economic incentives system is sort of an implicit critique or an occasion for reopening that issue and saying, "Which of these constraints really are justified and which are not?"

MR. ELLIOTT: Let me just follow up on that. Particularly in areas where we have discretion, many of the constructions that we at EPA have made in the past of various provisions of the statute may not really be required by the statute. We may want to revisit interpretations at the margin in order to try to harmonize things in a way that is the best reflection of the complex set of goals that are reflected in the statute.

CHAIRMAN BREGER: Any further questions?

52. See e.g., Pub. L. 101-549, sec. 401, § 413, 104 Stat. 2399, 2625 (1990) (holding of acid rain allowances "shall not exempt . . . from compliance with any other applicable requirements" of the Act).

QUESTION:⁵³ To what extent, when you talked about awards, for example, going back if they were below their goal, and so forth—what is the indication of results? Has this resulted in lower prices, for example, to the buyers of the goods that presumably are being produced? I think it was alluded to by one individual that there might be a move to go to another area in the case of the utility, for example. To what extent has location of industry been affected by what is going on? Is there evidence of that nature? Last of all, which seems to be the most crucial—I think this was touched on by the first gentleman—had to do with to what extent has this had any effect at all on our international trade position? In other words, we are seeking a desirable goal, but has it had some effect on world competition?

MR. STEWART: Well, I'd just say that the evidence one could debate, as was debated a little implicitly here about the bubble policy or the other emissions trading policies, but the evidence is that it is cheaper to achieve a given level of emissions control if you allow flexibility among different units or sources so that the sources that can do it more cheaply, or find new ways to do it, and take on more of the burden. The amounts are not precisely quantified, but certainly several hundreds of millions of dollars in the bubble example.⁵⁴

In the lead phase-down, a similar magnitude of cost savings was had by allowing flexibility and a more cost-effective allocation of the burden.⁵⁵

And presumably that does translate into a benefit for the competitiveness of United States industry. That is a concern. In many areas at least we have the most demanding environmental standards—certainly as enforced, I think. Therefore, from the viewpoint of international competitiveness it behooves us, to the extent we possibly can, to find more cost-effective—both in the static and in the dynamic sense—ways to get the job done.

CHAIRMAN BREGER: I think we have time for final comments from the panel. We'll start with Mr. Hawkins.

MR. HAWKINS: Well, I guess my final comment will be, in some way, another response to the last question because it is a question of the type that environmentalists are often asked. We have spent all this money on pollution control; is it showing up in hospital admission rates or longevity? The answer that I would give with respect to the perceived benefits of economic incentives is similar to the answer that I am often giving with respect to the perceived benefits at the margin for a given improvement in environmental control, and that is: you have a problem with the signal-to-noise ratio, in engineering terms. The signal is often very small; the noise is often very large.

53. Mr. Philip Dillaber of Woodbridge, Virginia.

54. Hahn & Hester, *supra* note 11, at 374.

55. *Id.* at 387.

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It is not that the effect is absent; it is that it is hidden by our failure to collect very accurate information, in the first place, and separating out the effect of a change at the margin is often very difficult. I think this is particularly true with respect to the specific types of signals that you were talking about, sir, because most environmental controls, even the old classic no-bend command-and-control regulation, at their worst, don't impose costs of more than 1 or 2 or 3 percent on the price of a product. So if you cut that in half by an innovative market-based incentive program, then you are relying on the free market system to make sure that that 1.5 percent effect gets translated back to the buyer.

Even if it did, you have the problem of the tiger that isn't there. How do you document what it would have been, given the fact that industry has a track record of making fairly high-priced cost estimates of environmental controls beforehand, and usually figuring out a way to comply at a lower cost than previously estimated. How much of that was due to their own efforts? How much of that was due to the fact that this was an economically efficient way to do it and it would have cost more had it been done some other way? You have really got a lot of problems first identifying the effect and then sorting out the cause of that effect.

MR. ELLIOTT: I'd also like to make a brief response to the gentleman's question.

We are often very imprecise when we talk about costs in the area of pollution control. If we have \$30 billion of cost for controlling air pollution, but in exchange for that \$30 billion we have \$45 billion of benefit in terms of reduction in disease and clean-up costs and so on, then we really have a net benefit. It is an investment.

The costs that we are talking about in this area are what are called "dead weight losses."⁵⁶ That is, when we're talking about \$400 million that we could have saved to get the same degree of benefit, we're talking about \$400 million that was wasted which purchased us nothing. That is a dead weight loss on the economy in the sense that we could have achieved exactly the same degree of benefit without spending that money. So these are dollars that really are very harmful to us from an international competitiveness point of view. I think, as Dick said, these programs have been studied pretty thoroughly on an experimental basis, and the savings that are available, if they are done properly, are pretty well a matter of record. In terms of the theoretical articles, there is a review article that Dick wrote with my colleague at Yale, Bruce Ackerman, and footnotes in that article collect a number of studies of these

56. For a good discussion of the differences between transfers and "dead weight costs," see Hahn & Hird, *The Costs and Benefits of Regulation*, 8 YALE J. REG. 233, 247 (1991).

systems and show how much savings would have been achieved by them.⁵⁷ Plus, a couple of them have actually been implemented in practice. So the fact that there are these dead weight losses that can be avoided by going to a more efficient system is pretty well understood in theory.

I think the stage that we are at now is trying to actually make these systems live up to their promise and practice. There is a lot that needs to be done on the implementation side to make sure that we really achieve them. I guess that's where I'd like to leave it.

I was struck, as I listened to Dave Hawkins' comments, at how really productive they were. I think it is a wonderful thing that we are having the dialogue today, not about whether to go more to incentive-based systems, which is what the dialogue was about for a long time, but about how to do it—*how* to do it in a way that protects other values and makes sure the system isn't exploited unfairly by others. I think that there is a tremendous opportunity for those of us interested in the progress and development of regulatory institutions over the next two or three years, to engage in a very positive dialogue about how to make these systems work in practice. I think that's really an epic change from where the dialogue has been in the past.

MR. STEWART: I'd just note that, while I agree, there is a long way to go. The overwhelming part of our apparatus is the command and control sort with all of its problems—not the least of which is litigation and the long administrative proceedings that entails. There are powerful vested interests, as has been noted, with a stake in the status quo. They have learned to live with it. They can manage it. The market is unpredictable. The last people who like to rely on the market, of course, are the businessmen. Also, from the viewpoint of the public, there is, of course, strong commitment to environmental quality, but not much knowledge or appreciation of the means or alternative means for getting there. Finally, you have people like Dave Hawkins at NRDC who see that economic-based incentive systems can make a contribution, but they are going to be pretty picky and risk averse and very careful about what they are going to sign on to, and I understand that. I think if you add all that up, there is a powerful inertia factor that has to be overcome. So there is a long road ahead, but I think the inherent logic of the alternative, in my naive optimism, persuades me that we are going to build on where we are now and move forward.

CHAIRMAN BREGER: Thank you very much.

Elliott's suggestion that the Administrative Conference study how to create regulatory systems that are more sensitive to market incentives and performance standards is a useful reminder. We have done work in this area in the past as

57. Ackerman & Stewart, *Reforming Environmental Law: The Democratic Case for Market Incentives*, 13 COLUMBIA J. ENVTL. L. 171, 175-77 & nn. 9-14 (1988).

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in or 1987 recommendations for improving OSHA regulation.⁵⁸ We should be doing more.

In my own view, not enough attention is paid to the concept of risk-communication as a regulatory device.⁵⁹ I see no reason why persons should not be allowed to make their own choices if they receive sufficient information.

I want to thank all of you in the audience for participating, and the panel, as well.

Thank you.

58. ACUS Recommendation 87-10, *Regulation by the Occupational Safety and Health Administration*, 1 C.F.R. §305.87-10 (1990).

59. The Administrative Conference recently adopted a formal recommendation suggesting ways OSHA and EPA can improve their existing risk communication programs and urging other agencies to consider incorporating risk communication in their regulatory programs. See ACUS Recommendation 90-3, "Use of Risk Communication by Regulatory Agencies in Protecting Health, Safety, and the Environment," 55 Fed. Reg. 34,212 (1990).

